

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicants : Anna KRON et al.  
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For : MICROSPHERES  
Examiner : Irina Sopjia Zemel  
Art Unit : 1796

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Date: September 9, 2009

Signature: Julie Forero/

**REPLY BRIEF PURSUANT TO 37 C.F.R. § 41.41**

SIR:

In response to the Examiner's Answer mailed on July 9, 2009, Appellants submit this Reply Brief in accordance with 37 C.F.R. §41.41 in the above captioned patent application. For at least the reasons more fully set forth below, as well as the reasons more fully set forth in the "Appeal Brief", filed on January 26, 2009 and April 6, 2009, the rejections of claims 1-23 should be reversed.

### REMARKS

The Examiner's Answer, like the Final Office Action, appears to rely on a teaching, suggestion, or motivation to modify or combine the cited references to arrive at the claimed features by substituting the cyanoethylation agents in Nakayama with the agents disclosed in Miller. *See, e.g.*, Examiner's Answer, page 5, ("it would have been obvious to use agents disclosed by Miller in the process disclosed by Nakayama as functional equivalents of the agents disclosed by Nakayama with reasonable expectation of adequate results, since as discussed above, the sulfites disclosed in Miller are known for its function of reducing residual monomers in acrylonitrile based polymers ..... via the same chemical reaction of cyanoethylation with acrylonitrile....."); Final Office Action, page 4 ("Miller reference does not have to recognize specific advantages that the agents of his disclosure will bring about when used in process of Nakayama, only reasonable expectation of success in using those agents is required. In addition, the examiner provided explicit motivation why use of such agents is not only expected to be used successfully, it is expected to provide some advantages...."). However, M.P.E.P. § 2143 states that, in order to rely on the teaching/suggestion/motivation rationale in support of an obviousness rejection:

Office personnel must articulate the following:

- (1) a finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
- (2) a finding that there was reasonable expectation of success; and
- (3) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness.

(Emphasis added). As set forth in the Appeal Brief, there is no apparent motivation for one of ordinary skill in the art to combine the references in the manner suggested by the Examiner's Answer and the Final Office Action. Further, the present rejection is deficient for at least the additional reason that it does not articulate: (1) a finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) a finding of a reasonable expectation of success; or (3) whatever additional findings based on the Graham factual inquiries may be necessary, in view of the

facts of the case under consideration, to explain a conclusion of obviousness. That is, despite adequate guidance by the Supreme Court in the *KSR* decision as well as adequate guidance by the M.P.E.P., a *prima facie* case of obviousness has not been established.

The Examiner maintains, although having conceded that polymer lattices/dispersions as in Miller and microspheres as in Nakayama exhibit different physical properties, that such physical properties are irrelevant for the proposed substitution of agents disclosed in Nakayama with the agents disclosed in Miller. Further, in the Examiner's Answer the Examiner asserts that the chemical reaction of the residual monomer contained in either one of the products does not depend on the physical shape of the of the polymeric products. According to the Examiner the reactions in Nakayama and Miller are the same chemical reactions.

Contrary to the Examiner's assertions Appellants submit that the chemical reactions are not equal considering the reactions in Nakayama and Miller are conducted under different reaction conditions. The result of a new combination in a chemical reaction is usually not predictable. This holds true even in cases where the basic chemical reactions are known, there may still be unforeseeable side reaction caused by other possible components in the different products as a result of the different reaction conditions. Further, unlike the Examiner's position the physical shape of the reactants is of importance in chemical reactions as it affects the possibility for the reactants to come into contact with the residual monomers and also determines to what extent unforeseeable side effects are detrimental. Appellants submit for example that it is impossible for a skilled artisan to predict, in view of the cited references, whether a certain reactant would affect the expansion capability of thermoplastic microspheres.

Moreover, contrary to the Examiner's assertions discoloration of the product (expandable thermoplastic microspheres) may not necessarily be the effect of the color of the reagent itself, but rather as a result of the reaction products which may not be sufficiently removed. Nor is it possible for a skilled artisan to predict which reagents among thousands of reagents will give a sufficiently effective reduction of residual monomers in expandable thermoplastic microspheres. Even less predictable is whether such reagents that provide an efficient reduction acrylonitrile monomer in the final product would not have other side effects such as discoloration or reduction of the expansion capability. For this reasons, Appellants submit there is no motivation to combine the cited references substituting the reagent in Nakayama with that from Miller.

With respect to the Examiner's assertion in the Examiner's Answer that one of ordinary skill in the art would not be aware of the expansion problem that some of the cyanoethylation agents may cause, considering that none of such agents are exemplified by Nakayama or that such problem is even discussed in Nakayama, such observation would provide even more strongly that there is a lack of motivation in substituting the agents in Nakayama with those in Miller. A person skilled in the art not knowing that the reagents suggested by Nakayama may be problematic would have no reason to substitute them for any other.

For these reasons, and contrary to the Examiner's assertion that the proposed substitution is nothing more than a simple substitution of one known element for another to obtain predictable results, the results of obtaining efficient reduction of residual monomers in expandable microspheres without undesired side effects are not predictable. Particularly, it is impossible to predict whether the reagents in Miller may be suitable for use with expandable thermoplastic microspheres so as to reduce the amount of acrylonitrile monomers while retaining expansion properties.

It appears that the Examiner has used the claimed invention and the problems and solutions described in the current invention as a roadmap to determine that the skilled artisan would be motivated to substitute the reagents in Nakayama with those in Miller, which is impermissible. See, *In re Fitch*, 972 F.2d 1260 (Fed. Cir. 1992) ("[I]t is impermissible to use the claimed invention as an instruction manual or template to piece together the teachings of the prior art so as that the claimed invention is rendered obvious ..... This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."); quoting from *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988). See also *In re Zurko*, 111 F.3d 887 (Fed. Cir. 1997), *reh'g in banc granted*, 116 F.3d 874 (Fed. Cir. 1997), *rev'd*, 142 F.3d 1447 (Fed. Cir. 1998), *rev'd sub nom. Dickinson v. Zurko*, 527 U.S. 150 (1999), *on remand*, 258 F.3d 1379 (Fed. Cir. 2001) ("[T]o say that the missing step comes from the nature of the problem to be solved begs the question because the Board has failed to show that this problem had been previously identified anywhere in the prior art."). Therefore, the rejection raised under 35 U.S.C. § 103(a) over Nakayama in view of Miller is apparently based on improper hindsight.

Thus, for the reasons set forth above and the reasons more fully set forth in the Appeal Brief, the rejections of claims 1-23 should be reversed.

Respectfully submitted,

Date: September 9, 2009

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